

CLAIMS

We claim:

- 1 1. (Currently amended) A polymer electrolyte comprising:
2 a modified ~~polymeric material, said modified polymeric material including a~~
3 halogen containing polymer having an enhanced halogen level ~~, said enhanced halogen level~~
4 relative to a halogen content of an unmodified ~~said~~ halogen containing polymer formed from
5 polymerization of its monomer;
6 a salt of an alkali metal; and
7 an aprotic solvent, wherein said salt and said aprotic solvent are integrated with
8 said modified polymeric material as a homogeneous material.

- 1 2. (Currently amended) The polymer electrolyte of claim 1, wherein said unmodified
2 halogen containing polymer includes at least one chlorine containing polymer.

- 1 3. (Original) The polymer electrolyte of claim 2, wherein said chlorine containing
2 polymer is polyvinylchloride (PVC).

- 1 4. (Currently amended) The polymer electrolyte of claim ~~[[3]]~~ 1, wherein ~~said~~
2 ~~polyvinylchloride (PVC) is suspension polyvinylchloride (PVC)~~ a lithium ion conductivity of
3 said polymer electrolyte at 25 C is between 0.01 S/cm² and .108 S/cm².

1 5. (Currently amended) The polymer electrolyte of claim [[3]] 1, wherein said
2 ~~polyvinylchloride (PVC) is emulsion polyvinylchloride (PVC)~~ a lithium ion conductivity of said
3 polymer electrolyte at 25 C is between 0.066 S/cm² and .108 S/cm².

1 6. (Original) The polymer electrolyte of claim 1, wherein said modified polymeric
2 material comprises C-PVC, said C-PVC having 60-72 wt % chlorine.

1 7. (Original) The polymer electrolyte of claim 6, wherein said polymer electrolyte
2 comprises 10-40 wt % of said C-PVC.

1 8. (Original) The polymer electrolyte of claim 1, wherein said alkali metal salt is at
2 least one selected from the group consisting of LiClO₄, LiBF₄, LiAsF₆, LiPF₆, LiCF₃SO₃ and
3 LiN(CF₃SO₂)₂.

1 9. (Original) The polymer electrolyte of claim 1, wherein said electrolyte comprises
2 from 3-20 wt % of said salt of an alkali metal.

1 10. (Original) The polymer electrolyte of claim 1, wherein as said aprotic solvent is at
2 least one selected from the group consisting of propylene carbonate, ethylene carbonate,
3 dimethyl carbonate, gamma-butyrolactone, 1,3-dioxolane and dimethoxyethane.

1 11. (Original) The polymer electrolyte of claim 1, wherein said electrolyte comprises
2 40-82 wt % of said aprotic solvent.

1 12. (Currently amended) A rechargeable battery, comprising:
2 an anode containing an alkali metal;
3 a cathode; and
4 a polymer electrolyte formed from a modified ~~polymeric material, said modified~~
5 ~~polymeric material including~~ a halogen containing polymer having an enhanced halogen level;
6 ~~said enhanced halogen level~~ relative to a halogen content of an unmodified ~~said~~ halogen
7 containing polymer formed from polymerization of its monomer, a salt of an alkali metal and an
8 aprotic solvent, wherein said salt and said aprotic solvent are integrated with said modified
9 polymeric material as a homogeneous material.

1 13. (Currently amended) The rechargeable battery of claim 12, wherein said
2 unmodified halogen containing polymer comprises at least one chlorine containing polymer.

1 14. (Original) The rechargeable battery of claim 13, wherein said modified polymeric
2 material comprises chlorinated polyvinylchloride (C-PVC).

1 15. (Original) The rechargeable battery of claim 12, wherein in said anode comprises
2 lithium.

1 16. (Currently amended) The rechargeable battery of claim 12, wherein ~~said anode~~
2 ~~comprises a lithium alloy~~ a lithium ion conductivity of said polymer electrolyte at 25 C is
3 between 0.01 S/cm² and .108 S/cm².

1 17. (Currently amended) The rechargeable battery of claim 16, wherein a lithium ion
2 conductivity of said polymer electrolyte at 25 C is between 0.066 S/cm² and .108 S/cm² as said
3 ~~lithium alloy is at least one selected from the group consisting of lithium-aluminum, lithium-~~
4 ~~aluminum-silicon, lithium-aluminum-cadmium, lithium-aluminum-bismuth and lithium-~~
5 ~~aluminum-tin.~~

1 18. (Currently amended) The rechargeable battery of claim 12, wherein said anode
2 comprises a lithium-ion intercalation material.

1 19. (Original) The rechargeable battery of claim 12, wherein said cathode comprises a
2 metal oxide.

1 20. (Original) The rechargeable battery of claim 12, wherein said cathode comprises a
2 lithium-transition metal oxide.

1 21. (Original) The rechargeable cell of claim 12, wherein said cathode is at least one
2 selected from the group consisting of MnO₂, LiMn₂O₄ and vanadium oxides (V_xO_y).

1 22. (Original) The rechargeable cell of claim 12, wherein said cathode comprises a
2 organic polymer.

1 23. (Original) The rechargeable cell of claim 12, wherein said cathode is at least one
2 selected from the group consisting of polyviologen, polyacetylene and polypyrrole.

1 24. (Original) The rechargeable cell of claim 12, wherein said cathode comprises a
2 sulfur containing material.

1 25. (Original) The rechargeable cell of claim 12, wherein said cathode is at least one
2 selected from the group consisting of TiS_2 , S, polysulphide and polythiophene.

1 26. (Cancelled)

1 27. (Cancelled)

1 28. (Cancelled)

1 29. (Cancelled)

1 30. (Cancelled)

1 31. (Cancelled)

1 32. (Cancelled)

1 33. (Cancelled)

1 34. (Cancelled)

35. (Cancelled)

36. (Cancelled)